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MPEP 706.02(j) provides the basic requirements which must be provided by the examiner in establishing prima facie obviousness under 35 U.S.C. 103. Four steps are required of the examiner including: (1) relevant teachings as identified by column/page & line number(s); (2) claim differences; (3) proposed modification of the reference(s) to arrive at the claimed subject matter; and (4) an explanation why the proposed modification would have been obvious under Section 103.

The MPEP also requires a showing by the examiner of three basic criteria to establish a prima facie rejection including: first, evidence for the suggestion or modification for modifying or combining references; second, a reasonable expectation of success; and finally, the reference(s) must teach or suggest all the claim limitations, and cannot be based on applicant's own disclosure.

Citing Ex Parte Clapp, the MPEP places the burden of proof on the examiner to provide evidence to support the conclusion of obviousness either from the references which must expressly or impliedly suggest the claimed invention, or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references.

It is the examiner who must meet this initial burden by applying specific evidence; and clearly the examiner has not met this burden with the unsupported "therefore" conclusions of obviousness, which fail to meet the stringent "legal motivation" requirements of MPEP ch. 2100.

The examiner's attempt to combine three disparate references is evidence in and of itself of the non-obviousness of all the claims, because not only has the examiner evaluated these references out of context for isolated teachings thereof, but the examiner has overlooked

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the fundamental teachings thereof.

In particular, it is not seen how either reference Hunter or Mitsuhashi are analogous art.

The scope of the prior art may be determined from applying In re Wood and Eversole, 202 USPQ 171, 174 (CCPA, 1979) :

The determination that a reference is from a nonanalogous art is therefore twofold. First, we decide if the reference is within the field of the inventor's endeavor. If it is not, we proceed to determine whether the reference is reasonably pertinent to the particular problem with which the inventor was involved.

Applicants' field of endeavor is electrochemical machining, a highly specific, complex, and esoteric technology.

This is in stark contrast with the field of endeavor in Hunter which is electrochemical deposition and etching, particularly on "micrometer and nanometer scales."

The computer search for the mere word "electrochemical" has most likely uncovered the Hunter reference, but note that it is not even in the same USPTO classification as the Bruns reference.

This is because the processes are fundamentally different from each other, and utilize fundamentally different apparatus and associated methods.

The main problem confronting the present Applicants is the elaborate set-up procedure required for accurately ECM machining a workpiece, as presented at paras. 10-18, for example.

The problem in Hunter is presented at col. 4, ll. 35+, for example, and is specific to "sub-micrometer spatial resolution...."

There is no nexus between Applicants' problem and the

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problem, or solution, in Hunter, and the examiner has not shown otherwise.

Similarly, the field of endeavor in Mitsuhashi is electricity discharge machining which is clearly not the same as electrochemical machining.

The USPTO may broadly interpret references in typical examination practice, but that interpretation must afford due weight to the technical nature of those references as would be understood by those skilled in the art, the "routineer" according to the examiner, not as based on those without the requisite knowledge or experience.

Furthermore, the problem in Mitsuhashi is "machining cycle time" which is specific to the actual electricity discharge machining of the turbine rotor, which is not relevant to how that apparatus is initially set up for operation.

Accordingly, the examiner has failed to show how Hunter and Mitsuhashi are analogous art, and all of the rejections using these references are without merit.

Assuming arguendo that these two references are analogous art, the examiner has nevertheless failed to present any technical or logical nexus between these references and Bruns for any combination thereof, and has failed to meet the stringent requirements of the MPEP.

Independent claims 1, 11, 18, and 20 recite method and apparatus for ECM machining a tandem blisk in two sequences while the blisk remains mounted in the machine, without the need to dismount the blisk for successive setup operations.

The examiner repeatedly admits for these four independent claims the fundamental shortcomings of Bruns, but then attempts to combine Hunter and Mitsuhashi without regard to the whole thereof, without regard to the specific teachings thereof, without regard to explaining the proposed modifications of Bruns, and without providing any legal

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motivation at all.

The examiner's bald statements "for the purpose of increased efficiency and allowing different machined geometries" for claims 1 and 11; "to increase efficiency and allow for multiple, different geometries..." for claim 18; and "would have found it obvious to perform..." for claim 20 are mere hindsight conclusions; are clearly not legal motivation, and lack any technical nexus of the whole teachings of these three disparate references.

The isolated use of each of the three references without any guide other than Applicants' claims is conspicuous. What feature from each reference should be selected, and which should not be selected, and why? How should such features be combined, and what problem is being solved? The examiner has not explained any of this, as required by the MPEP, and the stringent standards thereof.

The examiner attempts to apply Hunter for "multiple electrodes...," but without any nexus with Bruns or Mitsuhashi.

The examiner attempts to apply Mitsuhashi for "two electrodes are used to electrochemically machine a single part by having independent movement of the electrodes," but this is a clearly erroneous interpretation of this reference, and no nexus with either Bruns or Hunter has been shown by the examiner.

Does the examiner contend that the "electricity discharge machining" of Hunter is the same as the "electrochemical machining" in Bruns, or the "electrodeposition or etching" of Hunter? Where is the evidence of this?

It is notoriously well known that these processes are fundamentally different from each other, and the examiner has failed to afford any weight to these fundamental differences in the rush to reject Applicants' claims, now twice in two

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different office actions.

The examiner should now appreciate first hand the difficulty in combining references without guidance other than those references themselves. Even with the advantages of having Applicants' claims as the guide, the examiner has continued to be unsuccessful in fabricating plausible rejections when combining references, such as the three disparate references now being applied.

What does Hunter teach to one skilled in the art?

The examiner points to col. 10 for multiple electrodes, as also found at col. 7, ll. 50.

However, where is the figure of multiple electrodes, and how do they cooperate in an apparatus?

The examiner has clearly overlooked the fundamental teaching of Hunter for those multiple electrodes. Col. 10, as used by the examiner, specifically states that those electrodes are used "in parallel" so that "different reactants [can be] simultaneously deposited and etched...."

Notwithstanding the obvious differences between deposition, etching, and ECM machining; what does parallel mean? What does simultaneous mean? And, how are these teachings to be used in Bruns?

Applicants' claim 1 recites the ECM machining of the two blade rows 18,22 in sequence while still mounted in the machine.

In sequence is more analogous to in-series, and is the opposite of the in-parallel teaching of Hunter.

In sequence further occurs in successive time; and is the opposite of the simultaneous deposition and etching in Hunter from the multiple electrodes.

At best then, the examiner's proposed combination of the multiple electrodes of Hunter in Bruns would require the use of multiple ECM electrodes in Bruns around the perimeter of the unitary blisk therein "to electrochemically machine two

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shapes while the part is not removed from the machine."

But, claim 1 does not recite multiple electrodes in parallel for simultaneous ECM as the examiner's use of Hunter would require. The examiner must afford due weight to Applicants' claims as written, and the examiner cannot re-interpret the claims for the purpose of fabricating rejections, as he has clearly done. This is clear error.

And, the examiner has failed to show any nexus between the deposition/etching electrodes of Hunter with the quite different ECM electrodes of Bruns; nor has the examiner shown any nexus between the basis ECM apparatus of Bruns, and the different apparatus of Hunter.

The errors being made by the examiner are further compounded by the additional attempt to use Mitsuhashi.

The examiner simply opines that Mitsuhashi "teaches ... two electrodes ... to ... electrochemically machine a single part," but this is again clear error, and overlooks the very teachings of Mitsuhashi itself.

Mitsuhashi clearly discloses electricity discharge machining which is not the same or relevant to electrochemical machining, and the examiner has not, and cannot, show otherwise.

In Mitsuhashi, two sets of electrodes 22,23 on their exchangers 26,27 are used to "simultaneously" machine different portions of the common perimeter of the same rotor.

Note, again, "simultaneously."

How is this relevant to Bruns? In both Hunter, and now Mitsuhashi, the examiner requires the simultaneous use of two electrodes in Bruns, but that combination is clearly not relevant to Applicants' invention, including claim 1 in particular.

Claim 1 requires sequential ECM machining of two different blade rows; sequential.

In the examiner's combination of Bruns, Hunter, and

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Mitsuharu the one blisk of Bruns would be machined at multiple locations around the perimeter thereof simultaneously.

There are no two rows of blades in Bruns, Hunter, or Mitsuharu; and the examiner has not, and cannot, change the parallel and simultaneous basic teachings of Hunter and Mitsuharu into a sequential or non-simultaneous machining of two different rows of turbine blades, as opposed to the single row in Bruns, the single workpiece in Hunter, and the single rotor in Mitsuharu.

The examiner's contentions regarding independent apparatus claim 11 match the similar contentions for method claim 1, and are equally erroneous for the same reasons presented above.

The examiner's contentions regarding claims 2 and 12 are equally erroneous for failing to consider the applied references accurately or in the whole as required by the MPEP.

Claims 2 & 12 require different first and second directions for the movement of the same blisk.

Bruns teaches only a single movement direction for ECM machining the blisk.

Hunter has no relevant teaching in this regard, which is primarily due to the fact that Hunter does not teach any ECM machining relevant to Bruns.

And, Mitsuharu is quite specific in teaching the two sets of electrodes 22,23 on their corresponding exchangers 26,27 which electricity discharge machines different portions of the common rotor from opposite sides, without any teaching of any opposite movement of that rotor.

To the contrary, the examiner states, and Mitsuharu discloses, "independent movement of the two electrodes," which means those electrodes move to perform the machining, which is not the same as moving the rotor to perform that

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machining. How would it even be possible to move the rotor in Mitsuhashi in different directions, and at the same time effect simultaneous machining?

If the rotor in Mitsuhashi is moved away from one electrode gang, how would that gang operate to machine the rotor? Simultaneously?

Regarding claims 4, 8, and 13, the examiner's contentions are conspicuous fabrications having no basis in reality, and no basis in Bruns, Hunter, and Mitsuhashi; nor do they comply with the specificity requirements of the MPEP.

The examiner has overlooked claims 3 & 7 from which claims 4 & 8 depend; and has therefore given no weight to the additional features recited therein. Indeed, claims 3 & 7 are separately rejected in para. 4 of the office action, rendering without merit the rejection of claims 4 & 8 in para. 3 of the office action.

Claims 4, 8, and 13 recite the two offset machining planes in combination.

Hunter is silent on how multiple electrodes would be configured in the apparatus, and the examiner has not explained any such combination, or provided evidence therefor.

Bruns, at col. 16, explains its use for a tandem blisk; and that use includes the single set of electrodes moving in the single plane disclosed.

And, Mitsuhashi clearly discloses the use of the two gangs 26,27 of electrodes 22,23 which clearly would not, and could not, have any offset in two different planes or the required simultaneous machining would be rendered inoperative.

Accordingly, the very reference Mitsuhashi discloses how the two gangs of electrodes 22,23 are mounted relative to the common rotor rendering without merit or without evidence the examiner's simplistic and bald contentions of "bulky," or

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"difficult," or "interfere."

The examiner's use of the "expected skill of a routineer" is a conspicuous expedient for lack of evidence, and lack of teaching, and disregards the very references being applied by the examiner, without any context and without any problem solving; and further disregards the very skill of that "routineer" as evidenced by the references being applied.

No, the examiner is going far beyond the "expected skill of a routineer." The examiner's fabrications are clear evidence of the non-obviousness of the claims since the examiner has cited no teaching in these references from which the routineer would have found obvious Applicants' claims as specifically recited, and not as re-interpreted by the examiner without due weight thereto.

The examiner's contentions regarding claims 5 & 14 are not an accurate interpretation thereof, and disregard the very combinations being recited.

In claims 5 & 14, the two electrode pairs are separately translated toward the blades in the two rows without removing the blisk and tools from the machine.

The examiner's contentions of "expected skill," and "bulky," and "interfere," are yet again fabrications without support in any reference, and disregard the whole of those references and the whole of these claims being rejected.

Indeed, claim 5 depends from claim 3, and the examiner has provided no basis in para. 3 to reject claim 3, which is instead addressed in the para. 4 rejection.

The examiner's contention are not consistent with the applied references.

Bruns specifically teaches the use of a single set of electrodes for machining a tandem blisk, and there is no teaching of "bulky" or "interfere."

Hunter merely discloses multiple electrodes which do not

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appear to be "bulky" and would not appear to "interfere."

And, Mitsuhashi clearly shows two gangs 26,27 of electrodes 22,23 which clearly do not appear to be "bulky" and do not appear to "interfere" with anything.

Indeed, Mitsuhashi teaches against pairs of electrodes, since it uses separate electrodes 22,23 in the independent machining heads, which electrodes are simply "exchanged with new ones ... at an appropriate exchange time."

Claims 6 & 15 recite that the tool pairs are rotated in corresponding first and second directions during ECM machining.

Claim 6, like claims 5 & 4, depends from claim 3 overlooked by the examiner in the para. 3 rejection, which claim 3 is not addressed until the para. 4 rejection, rendering the present rejection without merit.

The examiner's reference to "col. 5, lines 1-19" of Bruns for claims 6 & 15 pertains to the turntable 74 from which the shaft 70 extends. This teaching is not relevant to the electrode tools of claims 6 & 15.

However, Bruns does disclose the turntable 56 from which the electrodes 18,20 extend. However, that is a single turntable which operates in the identical manner for the different stages of a tandem blisk, see col. 16.

The multiple electrodes in Hunter lack any nexus with the electrodes of Bruns.

The electrode gangs 26,27 of Mitsuhashi operate with correspondingly singular electrodes 22,23 in each head, and therefore teach away from their use in pairs in any manner relevant to Hunter, or Bruns, or claims 5 & 15.

It is noted that there are twenty distinct claims for method and apparatus with various features and combinations; yet the examiner has not found allowable even one of those claims; not even with the clear recognition of the fundamentally disparate references being applied, different

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from each other, and different from Applicants' claims.

This is evidence in and of itself of the examiner's failure to afford any weight, let alone due weight, to the different combinations being recited. The examiner's rejections contain rote and bald contentions lacking in requisite analysis and lacking in evidentiary support, and are conspicuous for the selective extractions from the references without regard to the whole thereof; and without regard to any problem solving analysis for which those references might have been combined by those skilled in the art.

However, the three references are so different from each other it does not even appear that they should or could be combined in any manner, let alone in a manner relevant to any of the claims now being rejected by the examiner.

Independent apparatus claim 18 recites a specific combination of features including the two pairs of electrodes having six axes of movement cooperating with movement of the tandem blisk along a seventh axis for machining two rows of blades.

The examiner admits that Bruns lacks any teaching in this regard; except Bruns at col. 16 discloses the ECM machining of a tandem blisk in sequential use of the same apparatus.

Why modify the Bruns apparatus when it is already capable of ECM machining tandem blisks in the first instance? The examiner has not explained this.

Instead, the examiner attempts to apply the disparate teachings of Hunter and Mitsuhashi, which are non-analogous art, in a rote and simplistic manner divorced from the complex and esoteric technology associated with each of the three different references being applied.

The examiner merely contends that Hunter and Mitsuhashi teach "duplicating the electrode tool" But how, and in

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what combination?

As indicated above, Hunter teaches multiple electrodes, but does not illustrate them or explain how they would be used in any manner relevant to ECM, when the electrodeposition and etching disclosed therein are quite irrelevant, irrespective of the number of electrodes.

And, Mitsuharu clearly discloses the two gangs 26,27 of electrodes 22,23 specifically mounted for simultaneous and independent electricity discharge machining of the common rotor. Of what relevance is this teaching to Hunter and Bruns?

At best, Mitsuharu might suggest using two sets of electrode tools in Bruns mounted on opposite sides of the common workpiece in the manner illustrated in Mitsuharu. But, that combination would effect simultaneous ECM machining of the same row of blades in the single or tandem blisk disclosed "to increase efficiency" as the examiner opines.

But, of what relevance to claim 18 is that combination?

The examiner must overlook that claim 18 also recites the seventh axis movement of the blisk in opposite directions for engaging the two tool pairs.

The examiner simply contends that "In order to space the two electrodes apart ... one ... would have ... included a means for translating the blisk along a 'seventh' axis ..." but where is the evidence of this, especially when Mitsuharu is to the contrary?

Mitsuharu clearly illustrates two heads 31,32 containing the electrodes 22,23 thereon, which heads are suitably mounted to engage the common rotor from opposite sides, with no teaching whatsoever of any "seventh" axis, or even any need therefor?

The examiner's combination of these three different references is yet again overly simplistic, and fails to afford due weight to Applicants' claims, and fails to

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consider those references in the whole.

And, the examiner has clearly overlooked the obvious. Why modify Bruns in the first instance, when it already works well enough on single blisks, as well as tandem blisks?

Any modification of the ECM apparatus in Bruns requires additional complexity and additional cost. Note, that the Bruns reference is specifically identified in Applicants' Background section, and that patent was issued in 1989, and the ECM apparatus has in fact been used for many years.

So, what problem in Bruns is the examiner identifying for any solution being proposed by the examiner?

The examiner is not allowed to use the teachings of Applicants' specification and claims to fabricate modifications of existing patents, like Bruns. The MPEP mandates a stringent analysis, and legal motivation based on evidence.

That a reference could be modified, as the examiner's various rejections require, is not the same as being obvious to modify that reference.

Claim 19 further recites sequential rotation of the blisks for the first and second tool pairs and translation of the blisk for alignment thereof.

The examiner's contentions in this regard are incomplete, erroneous, and fail to meet the stringent MPEP requirements.

Element "54" of Bruns is clearly not "means (54) for rotating the blisk" as the examiner baldly contends.

Element 54 in Bruns is a seal.

Claim 19 requires means to both rotate and translate the blisk between the two electrode pairs.

In Bruns, there is a single electrode pair, and the shaft 70 is rotated and translated by the elements 74,76 in cooperation therewith.

The examiner's bald contention of "obvious" is without

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regard to Bruns itself, or Hunter and Mitsuhashi being combined therewith.

"Bulky" and "difficult" and "interfere" as the examiner baldly contends are not problems extant in Bruns for which any solution from Hunter and Mitsuhashi would have any relevance.

The examiner's contentions are mere hindsight fabrications, divorced from the reality of Bruns, Hunter, and Mitsuhashi.

As indicated above Hunter does not disclose the configuration of the multiple electrodes being used by the examiner.

And, Mitsuhashi clearly shows the two heads 31,32 with corresponding electrodes 22,23 thereon configured in the same plane for simultaneously electricity discharge machining of different portions of the same rotor aligned in a single plane, or else the apparatus in Mitsuhashi would not operate as intended, or at all.

Accordingly, any combination being proposed by the examiner must necessarily follow the teachings of Hunter and Mitsuhashi in any modification of Bruns, and the examiner is not at liberty to disregard those teachings for the convenience of merely fabricating rejections in hindsight.

Claim 20 recites a specific method in which the different stages of a tandem blisk are ECM machined in sequences without removing the blisk and without re-setting up the tools.

The examiner's contentions for this claim are bald conjecture finding no support or evidence in the references being applied; and, indeed, the examiner's contentions are against the evidence of the very references being applied.

As indicated above, Bruns expressly discloses at col. 16 its use in ECM machining tandem blisks; and Applicants' Background section correspondingly discloses the requisite

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setup required therefor, and the multiple removal of the blisk during that setup, and as required between machining the different stages with different electrode tools.

Hunter discloses the use of multiple electrodes, but no configuration thereof is illustrated, nor is any relevant method disclosed except for simultaneous, parallel use; nor is the electrodeposition and etching of Hunter in any way relevant to the complex ECM machining disclosed in Bruns.

And, Mitsuhashi discloses the simultaneous use of the two head 31, 32 of electrodes.

The examiner has clearly failed to show how the simultaneous and parallel operations in Hunter and Mitsuhashi as applied to the Bruns in any way meet the sequential machining of two stages without removing the blisk and without re-setting up the tools as recited in claim 20.

Yet further, Mitsuhashi clearly teaches that multiple electrodes 26, 27 are provided on the corresponding exchangers 26, 27 for being exchanged "at an appropriate exchange time" in the electricity discharge machine.

But, Mitsuhashi is silent for when that exchange takes place and whether or not the rotor must be removed and whether or not the tools require setup between exchanges.

The silence of Mitsuhashi does not give the examiner license to baldly interpret therefrom whatever fabrication the examiner finds expedient in rejecting the claims.

The MPEP requires stringent analysis, and evidence, and legal motivation in evaluating claims under Section 103, all of which are lacking in the examiner's rush to reject each and every claim without regard to the whole of each claim, without regard to the merit of each claim, and without regard to the problems being solved or the attendant benefits.

Instead, the examiner applies disparate and non-analogous references in classic hindsight without regard to the very teachings thereof, without regard to any problems,

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express or inherent, and taking from those references with the surgical precision of hindsight only so much as desired, with the exclusion of the remainder, to fabricate rejections of Applicants' claims, each and every one, and deny Applicants a fair and objective evaluation of their claims for which they are entitled to commensurate patent protection.

Although the examiner has rejected claims 1-20 in para. 3 of the office action, he has not presented the requisite analysis or reasons to reject all twenty of those claims, and therefore the rejection of those claims not addressed is void ab initio as lacking any showing under the requirements of the MPEP and Section 103.

Accordingly, withdrawal of the omnibus rejection of claims 1-20 under Section 103(a) over Bruns et al, Hunter et al, and Mitsuhashi is warranted and is requested.

Applicants traverse the rejection of claims 3, 7, 9, 10, 16, and 17 under Section 103(a) over Bruns et al, Hunter et al, Mitsuhashi and "Applicant's admission of prior art."

The examiner now relies on his previous use of Bruns, Hunter, and Mitsuhashi, which references clearly fail to disclose the invention in the parent claims as required under Section 103 for the reasons presented above.

The examiner now attempts to use the expedient of "admission of prior art" without regard to the whole of the references being applied, and without regard to the whole of the claims now being rejected.

Claims 3 & 17 recite a method for setting up the machine specifically configured for ECM machining of the tandem blisk.

The examiner merely jumps to the "therefore" conclusion without any analysis or evidence whatsoever.

Paras. 12-14 of the Background section are clearly not any admission that the prior art is relevant to a two-stage

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ECM machine or its operation.

Those paragraphs and the Bruns reference itself clearly support the setup procedure being repeated independently for each of the two stages of the tandem blisk, and the examiner has provided no evidence to the contrary.

The examiner is not allowed to use Applicants' own teachings to reject Applicants' own claims; that would be impermissible boot strapping, and the examiner's guise of using the isolated teachings of Bruns, whether they be found in the Bruns reference itself, or in paras. 12-14 of Applicants' Background section does not transform those teachings into anything different or new for tandem blisks.

The examiner is also combining Hunter, but Hunter is silent in this regard, and Hunter is non-analogous art and is not technically relevant to the setup procedure recited in claims 3 & 17.

The examiner is further combining Mitsuharu, but Mitsuharu is quite express about using the two heads 31,32 simultaneously on the common rotor without any teaching whatsoever of removing that rotor at any time during any setup thereof.

The examiner simply opines that "it would have been obvious ... to have operated the two electrode pair machine in the same manner . . .," and what is that "same manner?"

That "same manner" is setting up the tandem blisk first for one stage, then ECM machining that one stage since this is what Bruns and paras. 12-14 of Applicants' Background section disclose.

Next, after completing ECM machining of the first stage, the ECM machine would then have to be yet again setup for machining the second stage. And, how would that be done?

"In the same manner," which requires machining of the second stage, or sample, and multiple removals thereof for inspecting the dimensions, and when that is complete ECM

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machining of the second stage would be accomplished.

So, "in the same manner" still requires multiple removal of the blisk or sample during setup in the sequence of operations disclosed by Bruns and paras. 12-14 for independently ECM machining the two different stages of the tandem blisk.

Yet, the examiner has overlooked this "routineer" interpretation of Bruns and paras. 12-14, and has overlooked the express features recited in claims 3 & 17 which enjoy the synergy of effecting the setup simultaneously even though the final ECM machining is not effected simultaneously, but in sequence.

Compare the simultaneous, parallel teachings of Hunter.

Compare, also the simultaneous, and equally parallel, teachings of Mitsuhashi.

Where then is the examiner's evidence to disregard these teachings, and simply jump to the conclusion that the examiner's mere, unexplained combination of the structure and methods of Bruns, Hunter, Mitsuhashi would somehow suggest to the "routineer" to disregard those very teachings, and conduct the setup of the tandem blisk in the single sequence recited in claims 3 & 17?

There is no such evidence, and the examiner's rejection is therefore without merit.

As for claims 7 & 16, para. 15 of Applicants' Background section is not any admission relevant to these claims, does not give the examiner license to jump to his unsupported conclusion based on the combination of Bruns, Hunter, and Mitsuhashi which, as explained above, are quite different from each other in structure, method, operation, and purpose.

Claims 7 & 16 recite not only different blade size, but complementary electrode tools, which, of course, would have different size; and corresponding translation and rotation of the different tool pairs in the different first and second

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directions.

In Hunter, the multiple electrodes may have different sizes, but are nevertheless operated in parallel and simultaneously "to optimize fabrication rates."

In Mitsuhashi, the multiple electrodes 22,23 would appear to be identical because they are operated simultaneously on the same rotor to electricity discharge machine the repetitive features therein so that the "machining cycle time ... can be shortened."

In claims 7 and 16, the tool pairs have different size but are not operated simultaneously as the examiner's combination of Bruns, Hunter, and Mitsuhashi would require.

And, that combination of Bruns, Hunter, and Mitsuhashi would include matching heads 31,32 operating simultaneously on the same rotor without any need to rotate and translate the electrodes 22,23 in different directions, or relative to any movement of the rotor itself, which does appear to be taught in Mitsuhashi.

"In order to independently optimize the processing of each row of blades" as the examiner contends clearly is not legal motivation, and clearly overlooks the fundamental differences and teachings of these disparate references.

Claims 9 & 10 recite the use of the same or different blisk sample, in combinations not addressed by the examiner in his mere reference to para. 12 of the Background section.

Why has the examiner taken from para. 12 only this isolated teaching to the exclusion of the remainder of this para. 12.

Para. 12 also states that an "elaborate setup procedure" is required for using the ECM apparatus to machine blisks.

Para. 15 explains the additional complexity of the ECM process for tandem blisks.

Paras. 16 & 17 explain the setup process for the tandem blisks which requires corresponding setup for each of the two

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stages.

So, why has the examiner taken para. 12 out of context? Because of impermissible selective hindsight reconstruction, plain and simple.

The examiner's simplistic comments at page 7 for rejecting claims 9 & 10 fail to comply with the requisite MPEP analysis, and showing of evidence, and lack any motivation at all, let alone legal motivation.

Accordingly, withdrawal of the rejection of claims 3, 7, 9, 10, 16, and 17 under Section 103(a) over Bruns et al, Hunter et al, Mitsuhashi, and "Applicant's admission of prior art" is warranted and is requested.

The examiner has clearly not provided any evidence in Bruns, or Hunter, or Mitsuhashi, or in Applicants' own Background section why one skilled in the art, or the "routineer" according to the examiner, would have modified Bruns for any reason, or in any manner, since the examiner's various rejections lack the requisite analysis, lack any relevant problem being solved, and lack any legal motivation to combine in general, and, more importantly to combine in the specific combinations recited in all twenty claims, which are different from each other.

Bruns already expressly teaches the ability to ECM tandem blisks by repeating the "same" setup and machining processes in sequence, albeit with the same apparatus using different electrodes.

Hunter teaches a disparate electrodeposition and etching process having no disclosed relevance to the ECM machining of Bruns, yet the examiner blindly applies this reference for the use of multiple electrodes thereof, without regard to what that combination would entail since that combination is not illustrated in Hunter.

However, Hunter is quite clear that those multiple electrodes would be operated in parallel and simultaneously.

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Similarly, Mitsuhashi is quite clear that the two heads 31,32 with their corresponding electrodes 22,23 would also be operated in parallel and simultaneously on the same rotor part.

Applicants' claims are in stark contrast since they expressly recite apparatus and method for the sequential ECM machining of the tandem blisks, which is clearly not the simultaneous and parallel teachings of Hunter and Mitsuhashi.

And, Hunter and Mitsuhashi are conspicuously silent on any teaching for any setup thereof, which setup, of course, is required in the ECM apparatus of Bruns for effecting the precise machining for which the ECM apparatus is being used.

Brun's discloses an ECM apparatus which is clearly setup in the elaborate sequence disclosed in Applicants' Background section in which the workpiece is typically removed multiple times for inspection prior to final ECM machining, which process, by the way, has been used for many years in actual production, to great advantage commensurate therewith.

That setup process for Bruns has been repeated for the different stages of the tandem blisks in a corresponding sequence.

The present Applicants now present the associated problems of that ECM machine, and the present Applicants now present a substantial improvement of that process, which, yet again of course, would require an increased complexity of the basic ECM apparatus and increased cost thereof.

Where then has the examiner provided any analysis, or identified any problem in Bruns, or Hunter, or Mitsuhashi for which the solutions thereof might be combined in any manner relevant to Bruns, and to Applicants' claims?

The various contentions being proffered by the examiner are conspicuous in their lack of analysis, and conspicuous for the mere conclusions of obvious, and conspicuous for disregarding the very teachings of the references being

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applied.

Most notably, both Hunter and Mitsuhashi disclose and teach the use of multiple electrodes in parallel for simultaneous use on their respective workpieces for their respective electrodeposition/etching and electricity discharge machining operations having no relevance to the ECM machining of Bruns.

Applicants' claims in stark contrast recite apparatus and methods for effecting sequential ECM machining of the different stages of the tandem blisk, and with a common setup procedure for both sequences.

This sequential operation is clearly not the same as the parallel and simultaneous operation disclosed in Hunter and Mitsuhashi, and is quite to the contrary; and Hunter and Mitsuhashi are conspicuously silent on any need or procedure for setup thereof.

Instead, the examiner attempts to use the clear silence of all three references being applied, and Applicants' own Background section to fabricate rejections without regard to the merits thereof.

None of the rejections, therefore, have any merit, nor can they stand.

The examiner has now twice examined the present application with commensurate thoroughness and evaluation of the references, and now has twice failed to present rejections supported by the applied references.

It is now time to allow all twenty claims, for even with the advantage of hindsight, the examiner has been unable to craft even plausible rejections of the claims.

In accordance with the duty imposed by 37 CFR 1.104 and MPEP sections 707, 707.05, 707.07, and 707.07(g), the examiner is requested to yet again update the search and reconsider all references of record to ensure full compliance with the required thoroughness of examination.